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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/970,100	10/02/2001	Vishnu K. Agarwal	500453.04	2699
27076	7590	10/29/2003	EXAMINER	
DORSEY & WHITNEY LLP INTELLECTUAL PROPERTY DEPARTMENT SUITE 3400 1420 FIFTH AVENUE SEATTLE, WA 98101			FLETCHER III, WILLIAM P	
			ART UNIT	PAPER NUMBER
			1762	

DATE MAILED: 10/29/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/970,100	AGARWAL ET AL.	
	Examiner	Art Unit	
	William P. Fletcher III	1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 55,57,59,69,70,72 and 80-89 is/are pending in the application.
- 4a) Of the above claim(s) 80-83 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 55,57,59,69,70,72 and 84-89 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 May 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 06 May 2003 is: a) ☐ approved b) ☒ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/10/03 has been entered.

Drawings

2. Applicant's formal drawings file 05/06/03 are objected to by the Draftsperson as set-forth in the Form PTO-948 attached to the Office action mailed 06/23/03. A proposed drawing correction or corrected drawings are required in reply to this Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. **Claims 55, 57, 59, 69, 70, 72, 84, 85, 86, 87, 88, 89, are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.**

Non-final Rejection

Claims 55 and 69 have been amended to recite forming a layer of hard, "inorganic" material and that this layer retains the pattern elements on the backing member. The originally-filed disclosure does not support either of these limitations.

Regarding the former, the spec. discloses that the hard material may be "silica [*sic*] nitride, ceria, silica, alumina, titanium nitride, titania, zirconia or other suitable metallic or ceramic materials" [paragraph bridging pp. 10 – 11]. While these materials are, to be sure, inorganic, this disclosure does not support possession of *any and all* inorganic materials. Possession of a species does not support possession of an entire genus.

Regarding the latter, the originally-filed disclosure does not anywhere disclose that the hard layer retains the pattern elements on the backing member.

Applicant is strongly encouraged, in traversing this rejection, to cite (i.e., page and line number) those portions of the originally-filed disclosure that applicant contends support the limitations in question.

5. The rejections of claims 85 and 88 under this heading in the Office action mailed 06/23/03 are withdrawn. See below for details.

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. **Claims 85 and 88 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.**

8. The term "generally" in claim s 85 and 88 is a relative term which renders the claim indefinite. The term "generally" is not defined by the claim, the specification does not provide a

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standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. The metes and bounds of the compressibility of the substrate in this claim are impossible to determine. How compressible may the substrate be to still be considered “generally incompressible?”

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. **Claims 55, 69, and 84 – 89 are rejected under 35 U.S.C. § 102(b) as being anticipated by Martin et al. (US 5,551,959).**

Martin teaches a method of manufacturing an article in which a backing member is coated first with an abrasive material and then over-coated with a hard carbon coating layer, specifically diamond-like carbon (DLC) [abstract; c. 3, l. 65 – c. 14, l. 48].

With reference to Fig. 1, the examiner notes that Martin teaches that a substrate 12 (preferably a polymeric film, such as polyester terephthalate) is first coated with a make coat 14 to which the abrasive particles 15 (which read on “pattern elements”) are adhered [cc. 6 – 7]. The make coat is preferably a thermoplastic or thermosetting resin adhesive [c. 12, l. 64 – c. 13, l. 42]. In one embodiment, the abrasive particles are applied directly to the make coat [see Fig. 1]. In another embodiment, the make coat resin and the abrasive particles are applied simultaneously as a slurry resulting in three-dimensional shapes projecting outward from the surface of the substrate [c. 5, ll. 11 – 36 and c. 10, ll. 59 – 60]. It is the examiner’s position that

both the abrasive particles 15 in Fig. 1 and the projections 47 in Fig. 4 read on forming a plurality of contour surfaces over the first surface of the polymeric substrate. With respect to Fig 4, the contour surfaces are formed *directly* on the surface of the substrate. The language of claims 55 and 69 is open, however, to the backing's being inclusive of other layers coated atop the substrate, so long as those layers are polymeric. Given this interpretation, Fig. 1 also reads on forming a plurality of contour surfaces, this time the polymeric backing being *both* the polymeric substrate and the polymeric make coat.

The contour surfaces, coated with the DLC coating layer form nodules projecting away from the surface of the backing member [Fig. 1, 16; Fig. 4, 48; and c. 6, l. 35 – c. 7, l. 67]. The DLC layer may or may not be over-coated with a size coat [Fig. 1, 18; c. 7, ll. 28 – 41]. It is the examiner's position that a diamond-like coating reads on a hard, inorganic coating layer. While Martin does not explicitly state that the DLC coating retains the pattern elements on the backing member, in Figs. 1 – 3, the hard coating layer (16, 28, 38) completely covers the abrasive particles and is adherent to underlying surfaces [c. 4, ll. 64 – 67]. It is the examiner's position that, from the physical arrangement of the hard coating layer with respect to the abrasive particles, retention of the particles by the layer is an inherent feature of the invention of Martin. Further, the examiner notes that the language of the claims is broad enough to cover embodiments in which the hard layer is applied directly atop the particles and where there is/are other layers interposed both of which embodiments are taught by Martin.

With specific respect to new claims 84 – 89, Martin teaches that the preferred substrate is a polymeric film, such as polyester terephthalate film [c. 10, ll. 60 – 61]. Applicant's disclose at p. 10 of the spec., the specific example of MYLAR, which is a polyester terephthalate film.

Further, Martin teaches that the substrate can be a *flexible* material such as a polymeric film, primed polymeric film, cloth (including greige cloth), paper, vulcanized fiber, thermoplastics, non-wovens, metal (including metal substrates, metal foils, and the like), and treated versions thereof, and combinations thereof. Thicker *rigid* polymeric composites or metal backing may also be used as the substrate. Absent clear and convincing evidence to the contrary, it is the examiner's position that this disclosure of a wide variety of substrates including sheets and sheet-like films of flexible or rigid polymers read on the compressible, incompressible, and cured resin substrates claimed.

Lastly, Martin teaches that a wide variety of workpieces may be machined by the abrasive article manufactured according to the above method. Martin does not specifically state that the workpiece is a microelectronic-device substrate assembly. This is, however, merely a statement of intended use. Since Martin anticipates all of applicant's claimed method steps, and unless some critical method step has not been recited in the claims, it is the examiner's position that the abrasive article manufactured according to the method of Martin is inherently capable of planarizing a microelectronic-device substrate assembly.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. § 103(a), the examiner presumes that the subject matter of the various claims was

commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. § 103(c) and potential 35 U.S.C. § 102(e), (f) or (g) prior art under 35 U.S.C. § 103(a).

11. Claims 57, 59, 70, and 72 are rejected under 35 U.S.C. 103(a) as being unpatentable over Martin et al. (US 5,551,959; hereinafter "Martin"), as applied to claims 55 and 69, respectively, above, in further view of James et al. (US 6,069,080; hereinafter "James").

The teaching of Martin is detailed above. Further, the make coat resin and abrasive particles may be applied as slurry and that application may be by methods known in the art [c. 6, l. 52]. Martin does not teach: with respect to claims 57 and 70, that depositing a plurality of pattern elements over the first surface comprises coating the first surface with a liquid containing the pattern elements and evaporating the liquid to leave the pattern elements directly on the first surface of the backing member; and, with respect to claims 59 and 72, that coating the first surface with the liquid containing the pattern elements comprises spraying the first surface of the backing member with a solution including the liquid and the pattern elements.

James teaches a methods of manufacturing a fixed-abrasive polishing pad in which solid abrasive particles are dispersed in a aqueous solution of a resin binder and sprayed onto the substrate. "Each layer is dried...before application of subsequent layers" (i.e., spray coating with subsequent evaporation) [c. 11, ll. 40 – 63]. Furthermore James teaches that the sizes that the sizes of the abrasive particles "are preferably in the range of 10 – 1000 nm" [c.10, ll. 13 – 15].

Because Martin teaches that the abrasive slurry may be applied by a method known in the art, one of ordinary skill in the art would have looked to the prior art to find methods of applying the slurry. Further, James teaches spray coating particles from 10 – 1000 nm and Martin teaches abrasive particles from 0.1 – 1500 microns [c. 11, ll. 46 – 50]. It would, therefore, have been obvious to one of ordinary skill in the art to modify the method of Martin so as to apply the abrasive particles by spray coating according to the method of James. One of ordinary skill in the art would have been motivated by the desire and expectation of successfully coating the abrasive particles on the backing.

Response to Arguments

12. Applicant's arguments, see response, filed 10/10/03, with respect to the rejection of claims 85 and 88 under 35 U.S.C. 112, 1st Paragraph have been fully considered and are persuasive. The rejection of these claims has been withdrawn.

13. Applicant's arguments filed 10/10/03 have been fully considered but they are not persuasive. Applicant argues that the hard carbon layer of Martin does not adhere the abrasive particles to the surface. The claim does not require that the particles be *adhered*, rather that they be *retained*. The argument is not, therefore, commensurate in scope with the claim. As noted above, since the hard carbon coating either directly or indirectly covers the particles, it *physically retains* the particles in contact with the substrate. Consequently, Martin reads on the hard carbon layer's *retaining* the particles.

Conclusion

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to William P. Fletcher III whose telephone number is (703) 308-7956. The examiner can normally be reached on Monday through Friday, 9 AM to 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive P. Beck can be reached on (703) 308-2333. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

WPF 10/23/03
William P. Fletcher III
Examiner
Art Unit 1762


SHRIVE P. BECK
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700

Non-final Rejection